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MINUTES FROM 29 SEPTEMBER 1999 RESTORATION ADVISORY BOARD MEETING NTC ORLANDO FL
9/29/1999
NAVFAC SOUTHERN

Prepared: 10/13/99

Meeting Summary
Restoration Advisory Board
Naval Training Center (NTC), Orlan
September 29, 1999

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A meeting of the NTC, Orlando Restoration Advisory Board (RAB) was held on September 29, 1999, in the City Commission Chambers, Winter Park City Hall. Attached to this meeting summary are:

Attachment A: Meeting Agenda
Attachment B: RAB Member Sign-in Sheet
Attachment C: 1999 RAB Attendance Record
Attachment D: IRP Program Investigation Summary
Attachment E: Special Topic overheads (Information Repository Copy Only)
Attachment F: Community Mailing List Notice
Attachment G: Community Sign-In Sheet

RAB members present at the meeting were:

Penelope Felger
David Grabka
Wayne Hansel
Bruce Hossfield
Phillip Jaffe
Nancy Maloney
Tom Nelson
Nancy Rodriquez
Ann Williams
Kay Yeuell

Other support personnel present at the meeting included:

Rick Allen, Harding Lawson Associates
Al Aikens, Ch2M Hill
Steve McCoy, Tetra Tech NUS, Inc.
Vickie Stitt, Tetra Tech NUS, Inc.

Welcome

Wayne Hansel, Co-Chairman of NTC RAB, opened the meeting at 7:10. He welcomed the RAB members and others in attendance, reviewed the agenda and asked if anyone had any corrections to be made to the minutes or attendance for the last meeting. Hank Beers, Robert Mackey, Blanche Olsen, Geri Wojeck were noted as excused. Co-Chair Wayne Hansel noted that there were no members of the public present.

RAB News

None

RAB Administration and Comments

July RAB Meeting Summary: The July meeting summary was approved without comments.

Upcoming Meeting Schedule: The next RAB meeting is scheduled for November 17, 1999, at 7 p.m. in the Winter Park City Hall.

UST Update and Status

Wayne Hansel provided an update on Underground Storage Tank activities at NTC. His full report is in Attachment D.

RAB Comments and Questions on the UST Update and Status (paraphrased)

What is developing with all the property the city auctioned off? *The sale has not been completed yet. Negotiations are continuing and two lawsuits concerning the property are not settled yet.*

Special Topic: Study Area 2

A presentation was given by Rick Allen of Harding Lawson Associates and Steve McCoy of Tetra Tech NUS concerning the proposed decision on this property. Rick Allen's presentation summarized the development of the five chosen remedial alternatives.

Is the Eastern border of the site within the Study Area 2 plume? *Yes.*

There followed a discussion between the board members and Rick Allen concerning where the benzene could have come from, how it traveled so far, and if the plume is degrading naturally.

How much of benzene was detected in or near Lake Barkley? *None.*

Does methanogenic mean there's methane down in Study Area 2? *Yes, there is some methane.*

When the reaction occurs (referring to Alternative #3 for remediation of Study Area 2 benzene plume), does it all remain underground? *Yes.*

Does 'natural attenuation' mean leaving it alone (referring to Alternative #2 for remediation of Study Area 2 benzene plume)? *Yes, if it appears that the plume is degrading and conditions are good for continued degradation. The area would have to be monitored.*

Has benzene been found in Lake Underhill? *No.*

Does the public have access to the area? *Yes, and there have been insect spraying trucks seen dumping liquid into a ditch there. However, pesticides were not detected in the monitoring well samples. It is not known if the trucks are city, county or commercial. If benzene was currently being dumped, it would not have been found at deep levels. Shallow wells were tested and were free of benzene.*

Steve McCoy presented the results of the quarterly monitoring of Study Area 2 done in July 1999. Steve reported that the wells show a slow but steady decrease of benzene. Only one well showed no decrease and that was of some concern. Another sample will be taken in October and the results will probably not be known until December. The decision of what will be done about that particular well will be decided after the October results are known.

Wayne Hansel stated that the benzene levels are actually quite low. Even children playing in the ditch at this site would not be hurt by the benzene.

Another alternative method brought up by Kay Yeuell was a magnesium peroxide sock lowered directly into the well that has not shown a decrease in benzene. Dave Grabka said that underground water flow is very slow and it would take a long time to rid the well of benzene using this method.

Dave Grabka pointed out that all the clean wells have remained clean.

Other RAB Comments and Questions (paraphrased)

Co-Chair Wayne Hansel concluded the business portion of the meeting and the meeting was adjourned at 9:15 PM.

ATTACHMENT A

AGENDA

NTC, Orlando Restoration Advisory Board Meeting
September 15, 1999, 7:00 p.m.

Welcome/Opening Comments	Navy Co-Chair Mr. Wayne Hansel
RAB Administration And New Business	RAB Co-Chairs
BRAC Update	Wayne Hansel, BRAC Environmental Coordinator

Special Topic: Study Area 2 – Focused Feasibility Study Remediation Decision

Feedback on July meeting: RAB Members

- Finding of Suitability for Transfer (FOST) of Buildings and Property to GOAA and Proposed Plan for Operable Unit 3

Close RAB Business

Community Comments and Questions

Notes:

ATTACHMENT B

September 29, 1999

NTC, ORLANDO RAB MEMBER SIGN-IN SHEET ~~September 15, 1999~~

PRINT name clearly
Nancy Maloney community
Nancy Rodriguez
Phillip O. Joffe
DAVID GRABKA
Bruce Hossfield
Tom Nelson
Roy M. Jewell
WAYNE HANSEL
[illegible] Williams
Penelope Felger

ATTACHMENT C

Attachment C - 1999 RAB Attendance

RAB Member Name	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
H. Beers-Community	X		X		X		X		exc.			
P. Felger-Community	X		exc.		exc.		exc.		X			
D. Fuller-Community	exc.		X		exc.		exc.		exc.			
E. Granberry-Community	exc.		X		X		exc.		exc.			
W. Hansel-U.S. Navy, Southern Division	X		X		X		X		X			
B. Hossfield-City of Orlando	X		exc.		exc.		X		X			
P. Jaffe-Community	exc.		X		exc.		X		X			
R. Mackey-Community	exc.		exc.		X		X		exc.			
N. Maloney-Community	exc.		X		X		X		X			
D. Grabka-FL Dept. of Env. Protection	X		X		X		X		X			
T. Nelson-Community	exc.		exc.		exc.		X		X			
B. Olson-Community	X		X		exc.		X		exc.			
N. Rodriguez-U.S. Env. Protection Agency	X		X		X		X		X			
R. Underwood-Community	exc.											
Lt. Gary Whipple-NTC Orlando Public Works	X		exc.		X							
Ann Williams-Community	exc.		X		X		X		X			
G. Wojeck-Community	exc.		X		exc.		X		exc.			
K. Yeuell-Community	exc.		X		exc.		X		X			
T. Yost-Community	exc.		exc.		exc.		exc.		exc.			
X = attended meeting **exc. = excused absence** revised 08/98												

ATTACHMENT D

Installation Restoration Program Non-UST/AST Investigation Summary

Base Realignment and Closure, Naval Training Center, Orlando

Site Screening SAs/Operable Units for Main Base (MB), McCoy Annex (MA), Area "C" (AC), and Herndon Annex (HA)

SA	Location	BRAC Color Code	Building Number	Name	Reason for Investigation	Current Status
1	MB	1/White 1/White	3126 UNF-12	Hospital Civilian BEQ Alleged Hospital Landfill	40 square-foot stain on ground outside mechanical room Used as a landfill in the late 1970's, contents unknown	No significant detections in soil or groundwater. One groundwater sample had a lead level of 17.1 µg/l Vs. a FL MCL of 15 µg/l. The monitoring well was resampled 6/7/95 and no lead was detected. There was no evidence of landfilling operations. Property was approved for no further action (NFA) by OPT 7/24/96.
3	MB	4/Dk Grn	73/2816 2817	RTC 1st Lt. Storage/ Office/Shops	Hazardous materials are stored on the property and are regularly transferred to and from Building 2817 Former USAF Tactical Air Command operations involving Matador missile testing and personnel training	PCE (tetrachloroethene) detections of 9 µg/l and 12 µg/l (versus FL MCL of 3 µg/l) were detected in groundwater samples. OPT approved a groundwater use restriction near wells OLD-03-01 and -04 and groundwater monitoring for one year or until MCLs were achieved. Site was approved for monitoring only 8/97. Sampling of well OLD-03-04 was discontinued 12/98 as PCE had fallen below the FL MCL for 2 consecutive months. The most recent round of sampling (2/23/99) showed that PCE in well OLD-03-01 had decreased to 2.9 µg/l. ***Attempts were made to sample the well again in 5/99 and 7/99 but both times the well was dry. A deeper well was installed next to OLD-03-01 and sampled the week of 9/6/99.***
4	MB	4/Dk Grn 1/White	250/8 251	Rusk Memorial Chapel and covered walkways Rusk Memorial Chapel Annex	PCB spill of unknown quantity in the mid 1980's PCB spill at adjoining property (Bldg. 250) of unknown quantity	No significant detections in soil. No groundwater samples taken. Property was approved for NFA by OPT 7/24/96. Bldg. 250/8 is 4/Dk Grn and Bldg. 251 is 1/White.
5	MB	1/White	UNF-13	Septic Tank/Leachfield	Unknown environmental impacts from a previously existing motorboat rental/maintenance facility and septic tank	No significant detections in soil or groundwater. Geophysical surveys showed some buried pipes/metal objects. Property was approved for NFA by OPT 7/24/96.
6	MB	1/White		Lake Baldwin	Likelihood of contamination from stormwater runoff from golf course, photo lab, lead from former skeet range, drainage from firefighter training facility and motorboat maintenance facility, and alleged drum disposal in lake	Surface water had no significant detections. Sediments had elevated levels of lead and 4,4'-DDE, though below the FL probable effects level (PEL). 1 sample had elevated PAHs. Divers have investigated seven magnetic anomalies and observed various ferrous debris, but no items of environmental significance. Property was approved for NFA by OPT 7/96.
7	MB	1/White		Lake Susannah	Receives stormwater runoff from other suspect areas and alleged drum disposal in lake	Surface water had no significant detections. Sediments had elevated metals and PAHs, but below FL PELs. OPT approved for NFA 7/96.
8	MB	5/Yellow 3/Lt Grn	2134 UNF-15	Greenskeeper Storage Former WWTP - Main Base	Likelihood of petroleum and pesticide spills Burial of sludges from former WWTP and hospital demolition debris in WWTP lagoons	Arsenic in surface soil and groundwater at Greenskeeper Storage caused SA to be designated OU 3 (See listing for OU 3 (page 5). IRA (soil removal) completed 9/97 with 50 tons of soil excavated and backfilled with clean soil. See OU 3 for additional information. Evidence of demolition debris buried under golf course. Gross alpha, sodium, and manganese levels exceed screening criteria in three wells. Wells OLD-08-05 and -09 were resampled 12/29/95 due to elevated Mn (69.9 µg/l Vs. FDEP groundwater guidance level of 50 µg/l) and Na (248,000 µg/l Vs. 160,000 µg/l). Mn/Na levels were measured at 97.4 and 59,800 µg/l. OLD-08-06 was resampled 6/17/96 for gross alpha resulting in a gross alpha concentration of 0.39 pCi/l vs. 18.1 pCi/l during the initial sampling. Property was approved for NFA 6/97.
9	MB	5/Yellow	UNF-14	Former Pesticide/Herbicide Storage	Pesticide and herbicide releases may have occurred during operation of facility	Chlordane and arsenic in surface soil and pesticides in groundwater will require further study; with SA 8 (Greenskeeper Storage Area) has been designated OU 3. See OU 3 for additional information.

*Changes for this revision are bolded and italicized

See notes, glossary, and BRAC color codes at end of table

Installation Restoration Program Non-UST/AST Investigation Summary

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Site Screening SAs/Operable Units for Main Base (MB), McCoy Annex (MA), Area "C" (AC), and Herndon Annex (HA)

SA	Location	BRAC Color Code	Building Number	Name	Reason for Investigation	Current Status
10[2]	MB	1/White	IAS-4	Former Yard Waste Disposal Area	Contents of disposal area unknown	No significant detections in soil or groundwater. Property was approved for NFA by OPT 7/24/96.
27	MB	2/Blue 4/Dk Grn	2010 2073	Security Building Armory/Hurricane Storage Locker	Evidence of cleaning solvent and paint product disposal in the retention pond Cleaning solution draining into retention pond	Site screening investigation completed 6/96. Analytical results indicate that two surface soil samples had concentrations of BEHP or arsenic elevated slightly above residential screening levels but below industrial screening levels. A third sample had three PAHs with elevated concentrations. HLA completed delineation of PAHs in surface soils. Results indicate that approximately 44 yds^3 of soil did not meet FL residential SCGs. The Navy completed a soil removal in mid-April 98. Property was approved for NFA by OPT 7/1/98.
28	MB	1/White	114	Bowling/Arts & Crafts Center	Drip drying of silk screen operation may have impacted the soil and/or GW	Field work completed 8/97 and data evaluation completed 12/97. OPT approved for NFA 1/98.
29	MB	4/Dk Grn	127	Grounds Maintenance	Stained soil and stressed vegetation near a storage locker	Field work completed 8/97 and data evaluation completed 12/97. In 1/98 OPT approved for NFA, except for small portion of property with arsenic in surface soil where a non-residential use restriction will be imposed.
30	MB MB 4/Dk Grn	4/Dk Grn 4/Dk Grn 4/Dk Grn	129 131 2262	Automotive Hobby Shop Paint Shop Materials Storage Custodial Contractor	Waste oil storage and antifreeze/water separator Diesel fuel staining and stressed vegetation under an AST Past use as a pest control facility	Field work began 6/97, and included a geophysical survey (EM-61 and magnetometer) and a soil gas survey. Groundwater sampled 10/97. Resampling of two wells with chromium/nickel exceedances resulted in values well below action levels. Property was approved for NFA by OPT 7/1/98.
31	MB	2/Blue	354	Nuclear Power Field "A" School	Impacts from UST and the oil/water separator	Field work began 6/97. 12/97 OPT approved for NFA.
32	MB	1/White	358	BEQ/Heating Plant	Alleged dumping of paints, thinners, and petroleum products when this area was a motor pool	Field work began 6/97 and included a soil gas survey. Groundwater sampled 10/97. OPT approved for NFA 3/19/98.
33	MB	4/Dk Grn 4/Dk Grn 4/Dk Grn	2001 2002 2003 2004	Administration Building NTC Headquarters DFAS Office Administration Building	Dry well located on property Same as above Same as above Stains on floor and walls of boiler shed and mechanical room, and a dry well located on the property.	Field work completed 8/97. Groundwater sampled 10/97. OPT will require limited soil removal due to PAHs in surface soil, then resampling to confirm PAH removal. Soil removal was completed by Navy Public Works Dept. during wk of 3/2/98. Soil sampling at base of excavation in affected areas indicates PAH concentrations well below screening criteria. OPT approved NFA on 5/21/98.
34	MB	1/White	2024	NTC Supply	Unused supply well onsite	Appropriate well abandonment recommended for the former A/C supply well. St. John's River Water Management District removed the pump, logged and grouted the well. OPT approved NFA on 3/19/98.
35	MB	7/Gray 7/Gray	2078 2079	Auto Maintenance Facility Auto Maintenance Facility Storage	Soil staining associated with drum storage area Unlabelled drum and unknown storage practices concerning the hazardous materials at the facility	Field work began 6/97 and included a soil gas survey. Groundwater sampled 10/97. Further delineation and groundwater screening required due to high TRPH (up to 84,000 mg/kg) in several surface soil samples including 35S01401. Arsenic in surface soil samples at 9 of 16 locations at concentrations ranging from 1.1 to 6 mg/kg Vs. background screening concentration of 1.0 mg/kg. 4 microwells were installed wk of 3/2/98. No exceedances detected in groundwater. Navy conducted soil removal to address TRPH exceedances in soil samples 5/99. A fact sheet has been prepared for the public. ***Site screening report will be finalized after soil removal completion report has been finalized.***
36	MB	7/Gray	2121	PW Lumber Storage	Soil staining from an oil spill, drum storage area	Field work began 6/97 and included a soil gas survey. Groundwater sampled 10/97, resulting in TCE detection of 19 µg/l in well OLD-36-06. 5

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Installation Restoration Program Non-UST/AST Investigation Summary*

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SA	Location	BRAC Color Code	Building Number	Name	Reason for Investigation	Current Status
		7/Gray	2122	PW Shops	Suspect past and present storage and disposal of paints and solvents, solvents, and questionable oil collection practices	additional wells installed and sampled 6/98 to characterize TCE plume. TCE detected at 250 µg/l in well OLD-36-09 (screened 35 ft bls). 3 more monitoring wells were installed, including 2 deep wells to top of Hawthorn. No chlorinated solvents were detected in samples from the deep wells. A (draft) site screening report summarizing investigation activities was issued ***4/99 recommending soil removals and additional groundwater evaluation.***
37	MB	6/Red	2414	Flammable hazardous waste storage	Possibility of thinner and solvent spills, unknown hazardous materials handling practices	Field work began 6/97. Groundwater sampled 10/97. One surface soil sample had chlordane concentration of 92 mg/kg. HLA delineated chlordane; ***Navy conducted IRA soil removal 5/99. 5 microwells will be installed to determine groundwater quality under excavation area. Report on hold pending microwell results.***
38	MB	1/White	4001	Storage and use of pesticides and herbicides	Extensive oil and fuel staining to the floor	Field work completed in 8/97. OPT approved for NFA 12/97.
39[5]	MB	***6/Red***	4060	Loading Platform (Bldg. 137)	Potential landfilling in this area	Initial site screening studies completed 4/96, followed by supplemental soil and groundwater studies. Lab results indicate exceedances in surface soil for benzo(a)pyrene and arsenic. Groundwater had exceedances for PCE. Groundwater recommendations include a groundwater use restriction for surficial aquifer, completion of a risk assessment, and continued monitoring of selected wells. Probabilistic risk assessment results were presented to OPT 1/98 and indicated less than 10^{-6} risk. The future reuse of property has recently changed to nonresidential, so soil now meets State criteria. ***Final site screening report was approved 4/99. Fieldwork to further evaluate PCE groundwater plume began 7/99 and will be completed 9/99.***
			4067	Loading Platform (Bldg. 137)	Potential landfilling in this area	
			15109	Irrigation Well	In close proximity to the old coal storage area, out-of-service well onsite	
			UNF-10	Open Area (west of Nuclear Power School)	Unknown nature of coal staging area, west side of property allegedly used as a landfill	
40[5]	MB	7/Gray	21022	Softball Field	In close proximity to the bottle landfill (UNF-6) to the south, may be additional landfilling activities here.	Site screening studies were completed 4/96. Lab results indicate minor exceedances in surface soil from benzo(a)pyrene (200J mg/kg) and arsenic (1.1 mg/kg); groundwater had minor exceedances for gross beta (31.8 pCi/l). Additional field studies to characterize PAHs/arsenic in surface soils took place between 12/96 and 9/97. A fact sheet was prepared for the public. ***IRA soil removal activities were completed 5/99. Site screening report will be finalized following receipt of soil removal completion report.***
		7/Gray	21023	Softball Field	In close proximity to the bottle landfill (UNF-6) to the southwest, may be additional landfilling activities here.	
		7/Gray	UNF-6	Bottle Landfill	Landfill with unknown contents.	
41	MB	1/White	UNF-8	Open Area	Previous existence of buildings and storage tanks warrant further investigation	Former USTs/ASTs will be evaluated in the Tank Management Plan (TMP). Site screening evaluated potential PCB releases at former transformer sites. Field work completed in 8/97. OPT approved for NFA 12/97.
42 GRP V	MB	7/Gray	2055	Maintenance Shop	Storage of hazardous materials, two filled-in sumps onsite of unknown past use	Field work began 6/97. OPT concerns regarding PAHs in surface soil; HLA took 7 surface soil samples 2/26/98 to further characterize the site. 6 of 7 additional samples were ND or below SCGs for PAHs; 1 had benzo(a)pyrene with concentration equal to SCG. Site screening report issued as final draft at 6/98 OPT meeting, recommending limited soil removal. The Navy prepared a fact sheet for the public. ***Soil removal took place 5/99. Final report will be issued after receipt of soil removal completion report.***
43[5,6]	MB	1/White		North Grinder Landfill skeet range	Potential lead contamination.	6 surface soil samples (and 1 duplicate) collected and submitted for lead analysis 12/95. No exceedances were noted.

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Site Screening SAs/Operable Units for Main Base (MB), McCoy Annex (MA), Area "C" (AC), and Herndon Annex (HA)

SA	Location	BRAC Color Code	Building Number	Name	Reason for Investigation	Current Status
	MB	3/Lt Grn	229	Indoor rifle and pistol range	Potential lead contamination. (See also Herndon Annex, Building 601.)	18 surface soil samples (and 2 duplicates) submitted for lead analysis 12/95. One sample slightly exceeded screening criteria. TCLP analysis for lead at the location of the highest lead concentration was below the RCRA regulatory limit. This site was approved for NFA on 12/10/96.
44[5,6]	MB	1/White		Former motor pool and Missile Training Range	Possible PCE plume (Missile Training Range) and BTEX contamination (former motor pool).	Site screening studies completed 11/95. Field screening indicates localized BTEX and possible PCE/TCE contamination, but neither confirmed by monitoring wells. Six piezometers installed to evaluate groundwater flow anomaly. OPT approved for NFA 7/97.
		4/Dk Grn	former 2721	Silk screening facility	Alleged disposal area for solvents and paints when silk screening operation closed.	Site screening studies completed 11/95. Geophysical anomalies were investigated with two monitoring wells. Groundwater has no exceedances, but HLA recommended a limited test pitting program to determine source of geophysical anomalies. Test pitting completed 9/96 uncovered the buried foundations of Bldgs 2721 and 2722. Site approved for NFA.
45[5]	MB	1/White	125	Alleged disposal area near Bldg. 125	Alleged landfill with unknown contents.	Field screening completed 3/96. The analytical results indicate no environmental concerns. Site was reviewed for exceedances of Florida secondary drinking water standards (FSDWS) in groundwater and approved for NFA 6/19/97.
OU 1[3]	MB	3/Lt Grn	21	RTC Fitness Trail	Potential impact from North Grinder Landfill (contents of landfill not well documented).	The remedial investigation report concluded: (1) PAH contamination in surface soil does not pose unacceptable risks; (2) elevated gross alpha/gross beta in several wells adjacent to landfill are due to naturally-occurring radionuclides which have been mobilized by altered groundwater chemistry near and under the landfill; (3) a landfill cap will not be required; (4) groundwater should be monitored in downgradient wells to determine if there are any changes in contaminant concentrations as a function of time. The final RI report was submitted on 12/19/96. The final proposed plan was submitted 6/97, and a public meeting was held on 5/22/97. The Final ROD was submitted 6/30/97 and signed by the Navy 7/29/97.
		3/Lt Grn	4004	North Grinder (paved)		
		3/Lt Grn	4005	North Grinder (grass)		
		3/Lt Grn	4021	South Grinder (paved)		
		3/Lt Grn	4022	South Grinder (grass)		
OU 3	MB	5/Yellow	2134	Greenskeeper Storage	Confirmed arsenic in surface soils. An interim remedial action (IRA) took place in 9/97, resulting in 50 tons of soil being excavated and backfilled with clean soil.	Soil samples had elevated levels of arsenic (up to 577 mg/kg) Vs. a background screening level of 1 mg/kg. Groundwater had elevated levels of arsenic (up to 425 µg/l Vs. 50 µg/l MCL). A PRE was conducted indicating no ecological risk, but human health risk was higher than $1x10^{-6}$. The Greenskeeper Storage Area, along with SA 9, has been designated OU 3. RI Fieldwork began 10/97 and was completed 3/98. The RI report was completed 7/98 and the FS report was completed 12/98. FDEP and EPA RI and FS comments have been received, HLA responses have been submitted, approved and incorporated. ***The Final RI/FS report was submitted June 1999.*** Groundwater samples wwere collected 3/99 and 8/99 and additional soil removal actions were completed 4/99. The removal actions will reduce the risk posed by soil contamination, as well as reduce the source of groundwater contamination. Groundwater results suggest that contamination has been significantly reduced since 1997. No Further Action is anticipated for soils, and long-term monitoring of groundwater is recommended. ***The Proposed Plan for OU 3 was issued 7/1/99. The public comment period on the Proposed Plan will be from 7/1/99 to 8/1/99.***

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SA	Location	BRAC Color Code	Building Number	Name	Reason for Investigation	Current Status
OU 3	MB	5/Yellow	UNF-14	Former Pesticide and herbicide Storage	Pesticide and herbicide releases may have occurred during operation of facility. An interim remedial action (IRA took place in 9/97, resulting in 3,000 tons of soil being excavated and backfilled with clean soil.	Chlordane up to 2900 mg/kg Vs. screening value of 490 mg/kg. A PRE was conducted indicating no ecological risk, but human health risk was higher than $1x10^{-6}$. The site, along with the Greenskeeper Storage Area (SA 8), has been designated OU 3. See preceding summary (Greenskeeper Storage).
16	MA	1/White	7168	Maintenance Yard	Potential release from an oil-water separator	Field work for Group III Sites took place from 3/13/95 to 6/5/95. The (draft) Group III report was submitted to the Navy 12/15/95. There were significant detections of PAHs in four surface soil samples which slightly exceeded SCGs for some PAH compounds. Mineral spirits were present as free product in a well adjacent to an oil-water separator in the northern corner of the site. Site transferred to NTC TMP 10/96. Surface and subsurface soil samples were collected from 19 locations, and sediment samples from 4 locations in accordance with PAH workplan.
		2/Blue	7171	Army Motor Transportation	Potential releases of petroleum releases from motor pool operations	
		1/White	7172	Army Battery Shop	Stained soil associated with used battery storage, possible release of sulfuric acid from inside	
17	MA	7/Gray	7178	Training Material Storage	Evidence of paint dumped down the drains of adjacent wash rack.	Screening studies for SA 17 indicate: Surface soils had exceedances of several PAHs in several samples. Chlorinated solvents in groundwater exceeding MCLs. Groundwater studies indicate at least two source areas for chlorinated solvents and a plume measuring 200 feet wide by 400 feet long extending to the Hawthorn Group at 60 feet bls in the source areas and approximately 30 feet bls throughout the remainder of plume. ***The final site screening report was approved 4/99.*** An IRA soil removal ***was completed 5/99***, and studies to further evaluate the chlorinated solvent plume in groundwater are in the planning stages.
		7/Gray	7191	DPDO Warehouse	Ground staining and paint dumping evident	
		7/Gray	7193	Army Maintenance Office	Hazardous waste drum storage and alleged burial	
		6/Red	7190	Army Motor pool and drum storage area adjacent to 7190	Site used as a motor pool and vehicle storage compound.	
18	MA	7/Gray	7182	Housing Office	hazardous materials including paint, solvents, compressed gases and petroleum products stored there	Analytical results for SA 18 indicate surface soil detections of PAHs at one location exceeded Florida SCTLs. In addition, chlorinated solvents were detected in a monitoring well associated with a tank removal. ***DET completed soil removal activities 5/99. Groundwater was resampled 5/99; chlorinated solventswere not detected > GCTLs. Iron and aluminum, however, were > GCTLs.***
19	MA	1/White	7184	Auto Hobby Shop	Use of site as an auto hobby shop. Soil staining from waste oil evident	Analytical results for SA 19 indicate no significant detections in any media sampled. OPT approved for NFA 7/97.
20	MA	2/Blue	7187	Storage	Probability of pesticide storage	Analytical results for SA 20 indicate no significant detections in any media sampled. The site was approved for NFA 6/97.
21	MA	3/Lt Grn	7203	Maintenance Shop	Diesel fuel spill in 1993 from a leaking AST, and former pesticide storage	Analytical results for SA 21 indicate slight exceedances of SCGs for PAHs and arsenic in surface soil. Concerns regarding arsenic have prompted FDEP to have SA 21 reviewed by their risk assessment group. Field investigation to evaluate PAHs in surface soil completed 6/97. Property approved for NFA with restriction to recreational use 8/97.
22	MA	1/White	UNF-1	Old Golf Course	Alleged disposal of engines, bomb shells, and spent ordnance in Lake Stanley	Analytical results for SA 22 indicated no significant detections in surface water, sediment, or groundwater. Aluminum, iron and lead exceeded surface water standards. Sampling to evaluate allegations of landfilling have been completed and a limited test pitting program to evaluate geophysical anomalies was completed in 9/96 with no findings of environmental concern. A UXO survey performed by the Mayport EOD team did not reveal any items related to UXO disposal. OPT approved NFA 6/97.

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Installation Restoration Program Non-UST/AST Investigation Summary*

Base Realignment and Closure, Naval Training Center, Orlando

Site Screening SAs/Operable Units for Main Base (MB), McCoy Annex (MA), Area "C" (AC), and Herndon Annex (HA)

SA	Location	BRAC Color Code	Building Number	Name	Reason for Investigation	Current Status
23	MA	5/Yellow	UNF-2	Former officer's swimming pool and bathhouse (Bldg 7119)	Area used as a disposal pit for demolition debris, possibility of an unidentified UST	Analytical results for SA 23 indicate exceedances for PAHs in one surface soil sample at the end of the 12-inch drain to the former swimming pool. An IRA soil removal ***was completed 5/99, and a final report will be issued following receipt of soil removal completion report***
24	MA	1/White 1/White	UNF-4 UNF-5	Northwest Swamp Southeast Swamp	Former disposal area for construction debris. Former domestic wastewater treatment plant (DWTP) at the southeastern area, demolition debris	Analytical results for SA 24 indicate exceedances of some metals (aluminum, iron, manganese, potassium, vanadium) in groundwater, which may have been affected by the high suspended particulate (TSS = 500 and 360 mg/l. HLA presented results of a study to determine the relationship between high TSS/turbidity and elevated concentrations of metals above secondary groundwater standards. Property approved for NFA by OPT 6/97.
25	MA	4/Dk Grn		Former DWTP - McCoy Annex	Suspect due to the nature of the facility	Analytical results for SA 25 indicate iron and manganese exceedances in groundwater and slight exceedances of PAHs and pesticides in surface and subsurface soils. Resampling of OLD-25-03 for manganese on 7/25/96 determined a concentration of 662 µg/l Vs. a FSDWS of 50 µg/l. Property approved for NFA 7/97.
26	MA	1/White 1/White 1/White 1/White	7351 7352 7357 7358	Camp Bath House Camp Laundry Family Camp Office Family Camp	Past use as an airfield strip and drum storage area Same as above In close proximity to old airstrip, drums once stored here Past use as an airstrip and drum storage area	Analytical results for SA 26 indicate no significant contamination in any media sampled, with the exception of PAH exceedances in adjacent surface soil samples reported in the Background Sampling Report. These two locations have been designated SA 54 (see SA 54 for more information). OPT approved NFA 6/97.
46[5]	MA	1/White		Sewage disposal pit as part of DWTP	Within SA 25 (Grp III). Alleged disposal of non-domestic wastes.	SA 46 designated AEC-MC-01 in Technical Memorandum, U.S. Air Force Records Search. Screening investigation completed 6/96, and results indicated no evidence of environmental impact. Site has been approved for NFA.
47[5]	MA	1/White		Former skeet range	Potential lead contamination. Near SAs 25 and 26.	SA 47 designated AEC-MC-06 in Technical Memorandum, U.S. Air Force Records Search. Screening investigation completed 6/96, and results indicated no evidence of environmental impact. Site has been approved for NFA.
48[5]	MA	1/White		Former auto, boat, and carpentry hobby shop	Potential contamination from past site use.	Site screening investigations were completed 5/96. The analytical results revealed a single pesticide (DDE) slightly above the screening level in one groundwater sample, and a metal detector anomaly indicated a possible UST. Well OLD-48-03 was resampled for DDE 11/96: no pesticides were detected. GPR survey did not reveal a potential UST. Property approved for NFA 6/97.
49[5]	MA	1/White		Former disposal area	Potential contamination due to landfill with unknown contents. Near SAs 24, 46, and 47.	SA 49 designated AEC-MC-17 in Technical Memorandum, U.S. Air Force Records Search. Screening investigation completed 6/96. Preliminary geophysical results show no evidence of disposal activities. There are FSDWS exceedances in groundwater (aluminum and iron). HLA prepared a letter with recommendations for language to discuss FSDWS exceedances in groundwater. Property approved for NFA 7/97.
50[5]	MA	1/White 1/White 2/Blue 2/Blue 7/Gray 1/White	7189 7178 7253 7174 7179 RV	Former civil engineering yards (Bldgs. 7179 and 7182 investigated as SA18; Bldg. 7178 investigated as SA17).	Potential contamination due to past site use activities.	Site screening activities began 4/96, completed 5/96. Analytical results indicate two surface soil samples with benzo(a)pyrene concentrations exceeding residential soil screening levels, but below industrial screening levels. Bldg. 7174 requires remediation of petroleum groundwater plume. OPT approved for NFA with restriction for Building 7189 to future industrial reuse 8/97.

*Changes for this revision are bolded and italicized

See notes, glossary, and BRAC color codes at end of table

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SA	Location	BRAC Color Code	Building Number	Name	Reason for Investigation	Current Status
		7/Gray	Storage 7182			
51[5]	MA	1/White	7159	Former electrical substation	Potential PCB contamination due to spills and other incidents.	Site screening activities were completed 8/96. No PCBs were detected during field screening (immunoassay test kits) or in confirmatory samples submitted to laboratory. Site has been approved for NFA.
52	MA	***5/Yellow***	Former Building 7261	Former Entomology Lab	Potential pesticide contamination due to past use of building.	Site screening investigations were completed 5/96, confirming soil and groundwater samples with pesticides above screening levels. IRA (soil removal) completed 9/97 with 1,300 tons of soil excavated and backfilled with clean soil. Three monitoring wells were installed after the IRA. The well at the location of the most contaminated soil has dieldrin above the MCL. OPT recommended groundwater restriction and quarterly groundwater monitoring. The most recent sampling indicated groundwater was still well above the Florida GTCL (0.08 µg/l vs. GCTL of 0.005 µg/l. ***Final report, recommending continued groundwater monitoring and institutional controls, was approved by FDEP 5/99. Draft Decision Document was issued 8/99 and is in review. The Color Code will be changed to 4/Dk Grn upon incorporation of GW monitoring program into a decision document.***
53	MA	3/Lt Grn	Building 7262	Kwik Shoppe	Potential contamination due to past use as a coin operated dry cleaning facility.	Work plan submitted to Navy 4/3/96. Site screening began 4/96. Screening investigation completed 6/96. Field screening results indicated minimal impact to surface/subsurface soil from PCE/TCE. Analytical results below screening criteria. Site has been approved for NFA.
54	MA	5/Yellow		Background surface soil sample locations	PAHs in surface soil above the Florida SCGs were detected in surface soil during the background sampling investigation	Additional sampling and analysis with immunoassay (IA) following the background investigation confirmed the widespread presence of PAHs at sample locations ORS009 and ORS016. The final SA 54 report was submitted 8/99 and approved by FDEP. A work plan to identify the extent of PAH contamination has been prepared by Tetra Tech. Field work is scheduled to begin late 9/99.
OU 2	MA	6/Red 6/Red 6/Red 6/Red	7355 7354 7353 7356	McCoy Annex Golf Course Greenskeepers Storage Golf Course Club House Lawn Equipment Storage	OU 2 is a 99-acre landfill operated by the Air Force from 1960 until 1972 when the Navy took over the property. The Navy closed the landfill in 1978. A 9-hole golf course was constructed over the site, which is drained by a series of canals and retention ponds that discharge to Boggy Creek and Boggy Creek Swamp to the south. It is estimated that over 1,000,000 cubic yards of waste were disposed in the landfill, and that the waste included paints and other solvents, asbestos, transformers, hospital wastes, low-level radiological waste, scrap metal, demolition debris, and yard waste.	Tetra Tech NUS performed the first phase of RI fieldwork 5/97 to 11/97. This work consisted of geophysical surveys; a soil gas survey; sampling of surface soil, surface water, and sediment; groundwater screening with DPT; and cone penetrometer testing to evaluate aquifer stratigraphy. Additional fieldwork began 2/98 with additional geophysics to define the western landfill boundary. Piezometers and stream gauges were installed 3/98 to 4/98 to determine flow directions of groundwater and the connection with ponds, canals, and ditches. A DPT program was performed to delineate groundwater contamination, and subsequently monitoring wells were installed and groundwater sampled and analyzed. Groundwater was found at four locations around the landfill boundary to be contaminated with chlorinated solvents and fuel components. Soil over the landfill had exceedances of benzo(a)pyrene and arsenic. All of the media (surface soil, sediments, surface water, and groundwater) had radiological exceedances (gross alpha/gross beta) but the rad sources may be naturally-occurring. The Draft RI report was issued for review 1/99 and comments from FDEP (4/99) and EPA (5/99) have been received and responses submitted. ***Resampling of selected MWs and surface water/sediment locations began 6/99 and will be completed 9/99.***

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See notes, glossary, and BRAC color codes at end of table

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SA	Location	BRAC Color Code	Building Number	Name	Reason for Investigation	Current Status
2	HA	1/White ***4/Dk Grn***	6001	Septic Tank/Leachfield. Herndon landfill(s)	Exact contents of septic tank and drain field unknown (see "Other Areas" notes below for Herndon Annex Landfill). Potential contamination from unknown landfilled materials.	Field screening of the deep wells installed east of Building 606 and south of Building 610 indicate benzene concentrations of 21 and 32 µg/l, possibly related to former landfills at Herndon Annex. Additional field investigations indicate a probable off site benzene source. This land parcel was leased to the City of Orlando 12/96. Sampling of surface water in Lake Barton indicate PCE at concentrations below surface water standards. Offsite screening east of the parcel to determine the extent of benzene plume was completed 12/97. Two confirmation monitoring well clusters were installed 12/97. One deep well at intersection of Nancy Lee Ave. and Bobby St. detected benzene at 53 µg/l. Other confirmation wells in the two clusters did not have contaminants at concentrations of concern. HLA installed two additional wells to further evaluate the benzene plume. ***HLA final report (5/99)*** recommends groundwater use advisory to residents in affected area, an evaluation of remedial options, quarterly monitoring of selected wells, and transfer of parcel to Tank Management Program. ***Report was approved by FDEP and USEPA 6/99. Quarterly sampling began 7/99 and results showed a 15-50% decrease in benzene. Focused Feasibility Study draft report was issued 7/99.***
43[5,6]	HA	3/Lt Grn	601	Indoor rifle and pistol range	Herndon Annex, potential lead contamination. See the remainder of SA 43 at Main Base (North Grinder Landfill skeet range, Building 229).	18 surface soil samples (and 2 duplicates) collected and submitted for lead analysis 12/95. One sample exceeded regulatory screening level. TCLP analysis for lead at the location of the highest lead concentration was below the RCRA regulatory limit, and lead is therefore not of environmental concern. Site has been approved for NFA.
11	AC	1/White	148	Cold Storage Warehouse (Area C)	Abandoned half buried drum - Soil staining around generator pad transferred to UST Program	The field investigation for Group II sites was completed 4/6/95. Analytical results for SA 11 indicate no contaminants exceed guidance levels. Property has been approved for NFA.
12	AC	5/Yellow	1061, 1063	DRMO warehouses and salvage yard.		Transferred to OU 4, below.
13	AC	5/Yellow	1100, 1101	NTC laundry and old heating plant		Transferred to OU 4, below.
14	AC	5/Yellow	1102	Disposal, salvage and scrap building		Transferred to OU 4, below.
15	AC	1/White	1053	CBU-419 Maintenance Shop	Diesel fuel spill reported	Transferred to UST Program.
55	AC	***4/Dk Grn***	1104	PCB storage building	PCBs and hazardous materials were allegedly stored in Bldg 1104	HLA proposed site screening activities at the June OPT meeting, resulting in OPT discussion and minor revisions. The final letter workplan was submitted to the OPT on June 22, 1998. Field activities were completed in July 98. OPT approved NFA in January 1999 with restriction to nonresidential use.
OU 4	AC	5/Yellow	1063 and 1061	DRMO Warehouses and salvage yard, Laundry Drycleaners, Disposal Salvage Scrap Building	Former hazardous waste handling and storage area, spills are suspected and a former production well is on-site.	SAs 12, 13 and 14 have been grouped together and designated as OU 4. Soil and groundwater have elevated levels of PCE, TCE, and cis-DCE. Antimony has also been detected in groundwater at elevated concentrations. The highest contaminant concentration in soil was PCE at 430 µg/kg Vs. an SCG of 30 µg/kg. The highest concentrations in groundwater were PCE at 28,000 µg/l and TCE at 15,000 µg/l Vs. MCLs for

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See notes, glossary, and BRAC color codes at end of table

SA	Location	BRAC Color Code	Building Number	Name	Reason for Investigation	Current Status
						both compounds of 3 µg/l. Most of the highest VOC concentrations were found beneath the laundry building. Antimony was also detected in several wells at concentrations up to 16 µg/l Vs. a Florida MCL of 6 µg/l. The extent of groundwater contamination was established during the OU 4 remedial investigation. A focused investigation was conducted along the lakeshore to determine the source of VOC contamination in the lake. Another investigation was conducted beneath the laundry building to identify potential contamination source areas. Construction of two recirculating wells to mitigate the lake contamination began 11/10/97. These wells are part of an interim remedial action (IRA) while the RI and FS are completed. The IRA is an in-well stripping system that will intercept the contaminated groundwater before it reaches the lake and strip out the VOCs. The two recirculating wells are operational and a monitoring plan is in place. ***Groundwater quality discharging to Lake Druid has improved dramatically, particularly in the area due west of the IRA where VOC concentrations were the highest. As of the last sampling event in 1/99, FDEP surface water standards had been achieved in groundwater at this location. However, because of continued operational difficulties, the IRA has not yet achieved surface water standards along the entire portion of the lakeshore targeted by this remedial system. The Navy and its contractors continue to work to improve the performance of the IRA.*** The RI fieldwork began late 10/97, and was completed in 4/98. RI data will be used to characterize the nature and extent of contamination throughout the entire site, in areas identified during the initial screening. These results are being evaluated and will be used to select the best remedial technology. The ***draft*** RI report was issued in September 1998. ***The response to regulator comments to the draft OU4 RI was issued on May 8, 1999.*** ***The draft OU 4 Feasibility Study (FS) was issued in January 1999. This document evaluated various alternatives for remediation of the entire Operable Unit. Regulator comments to the draft FS have been received, and the Navy is in the process of responding to these comments. The final RI/FS will be issued together, currently scheduled for the Fall of 1999.*** ***In April, the Navy's Charleston Shipyard Detachment removed and disposed of surface soil from three locations at OU 4. The surface soil at these locations was determined to pose a potential risk to human health because of the presence of arsenic and polynuclear aromatic hydrocarbons (PAHs).*** ***The Navy continues to plan for a treatability study to evaluate in***

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SA	Loca-tion	BRAC Color Code	Building Number	Name	Reason for Investigation	Current Status
						situ chemical oxidation using potassium permanganate as a remediation technology for the VOC source area. An application for permission to inject the chemical has been submitted to Florida DEP. *The work plan for the study is expected to be issued in 7/99.*

Other Areas						
ACM		7/Gray	2713	Administration Building		
ACM		7/Gray	2651	Recycling Center		
ACM		7/Gray	2450	Demolished		
ACM/LBP		1/White		Capehart Housing	Currently designated as 1/White.	ACM and LBP surveys completed in 9/95.

NOTES

[1] Subject to change based on evolving evidence or knowledge.
[2] This area is in the southern portion of the Main Base golf course, near the small arms ammunition bunkers.
[3] This area also includes Building 208, the USS Bluejacket. The primary responsibility for this facility, however, lies within the UST program.
[4] Upon installation of additional monitoring wells and analysis of groundwater, a decision will be made regarding additional investigator requirements at this landfill.
[5] Sites discovered and/or reported in "Technical Memorandum, U.S. Air Force Records Search, September 1995" (HLA), and which will be investigated in accordance with work plan entitled "Site Screening Plan, Air Force Sites, Addendum 2," November 1995.
[6] Sites previously considered, but which will be investigated in accordance with work plan entitled "Site Screening Plan, Groups I through V SAs and Miscellaneous Additional Sites," Addendum 1, October 1995.

Regulatory Limits and Guidelines for Analytical Parameters:
- Groundwater - Maximum Contamination Limits (MCL), Federal and State promulgated
- Surface Water - FDEP Surface Water Quality Criteria (SWQC) Classes I through IV
- Soils - Risk Based Concentrations (RBC) from EPA Region III, Target Action Levels from FDEP (Screening guidelines only)
- Sediments - FDEP Sediment Quality Guidelines (SQG)
  - No Observable Effects Level (NOEL)
  - Probable Effects Level (PEL)
  - (Screening Guidelines Only)

GLOSSARY

AST = aboveground storage tank
BEHP = bis(2-ethylhexyl)phthalate
BTEX = benzene, toluene, ethylbenzene, and xylenes
DCE = dichloroethene
DDE = dichlorodiphenyldichloroethene
DPT = direct-push technology
EOD = explosive ordnance disposal
FS = feasibility study
FSDWS = Florida secondary drinking water standard
GCTL = (Florida) groundwater cleanup target level
GOAA = Greater Orlando Aviation Authority
HLA = Harding Lawson Associates, Inc. (Formerly ABB Environmental Services, Inc.)
IRA = interim remedial action
J = estimated
MCL = maximum contaminant level
mg/kg = milligrams per kilogram (parts per million)
Mn = manganese
Na = sodium
ND = not detected
NFA = no further action
OPT = Orlando Partnering Team
OU = operable unit
PAH = polynuclear aromatic hydrocarbon
PCE = perchloroethylene, or tetrachloroethene
pCi/l = picocuries per liter
PEL = probable effects level
PRE = preliminary risk evaluation
RAD = radiological parameter
RCRA = Resource Conservation and Recovery Act
RI = remedial investigation
SCTL = (Florida) soil cleanup target level
TCE = trichloroethene
TCLP = toxicity characteristic leachate procedure
TMP = tank management plan
TRPH = total recoverable petroleum hydrocarbons
TSS = total suspended solids
µg/kg = micrograms per kilogram (parts per billion)
µg/l = micrograms per liter (parts per billion)
UST = underground storage tank
UXO = unexploded ordnance

BRAC COLOR CODES

1/White. Areas where no release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas)
2/Blue. Areas where only release or disposal of petroleum products has occurred (but no release, disposal or migration from adjacent areas has occurred)
3/Lt Grn. Areas where release and/or migration of hazardous substances has occurred, but at concentrations that do not require a removal or remedial action
4/Dk Grn. Areas where release and/or migration of hazardous substances has occurred, and all remedial actions necessary to protect human health and the environment have been taken
5/Yellow. Areas where release and/or migration of hazardous substances has occurred, removal and/or remedial actions are under way, but all required response actions have not yet been taken
6/Red. Areas where release, disposal and/or migration of hazardous substances has occurred, but required response actions have not yet been implemented
7/Gray. Areas that have not been evaluated or require additional evaluation

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ATTACHMENT E

HERNDON ANNEX
STUDY AREA 2

Results of Site Screening Investigations

Site History

- Army Air Corps (1940)
  - Orlando air base (former municipal airport)
  - fighter pilot training
  - bomber training and tactics
- U.S. Air Force (1947)
  - separation center (post WW II)
  - air photo and charting service (1952)
  - tactical missile squadron (1954)
  - base sanitary landfill
- U.S. Navy (1968)

FIRE TRAINING AREA (1948-1962)
USED ONCE OR TWICE PER MONTH

Environmental Studies

- Environmental baseline study (1994)
- Identified as potential threat to human health and environment due to
  - abandoned septic system
  - landfilled areas
  - past fueling operations on aircraft parking aprons

HERNDON ANNEX
SITE SCREENING INVESTIGATIONS

- Phase I (1994)
  - Geophysics (Mag, GPR over landfills)
  - Soil borings/MWs (OLD0201 through -06)
- Phase II (1995)
  - 3 deep MWs, 2 shallow (OLD0207 to -11)
  - Surface soil sampling (10 locations)
  - DPT investigation No. 1 (02P001 to 02P012)

HERNDON ANNEX
SITE SCREENING INVESTIGATIONS

- **Phase III (1996)**
  - US Army Corps DPT survey S. of Annex (7/96)
  - Install 3 piezometer clusters (10/96)
  - DPT Investigation No. 2 (02P013 to 02P030) (10/96)

HERNDON ANNEX
SITE SCREENING INVESTIGATIONS

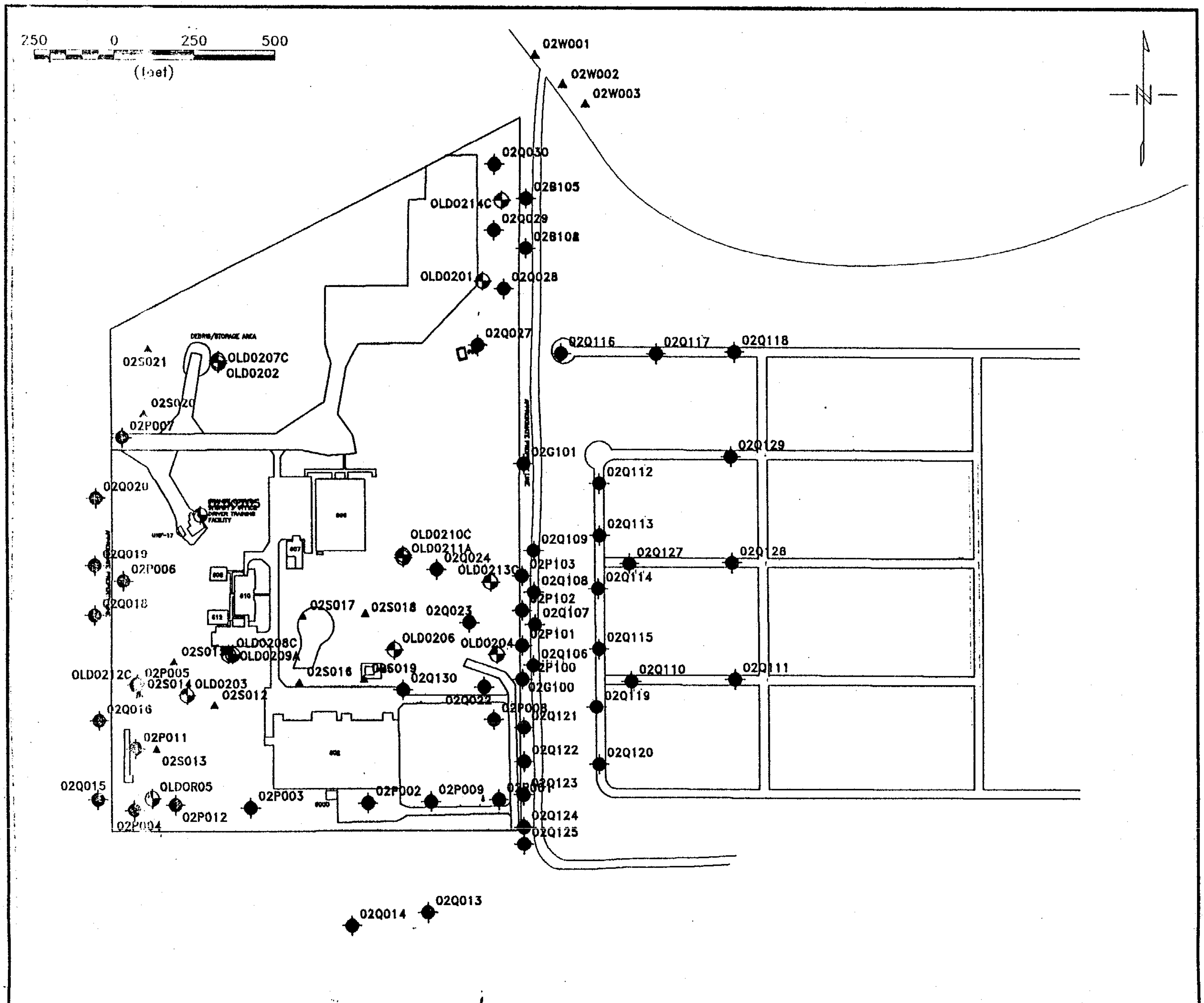
- **Phase IV (1997)**
  - Surface water sampling - L. Barton (3 locations) (4/97)
  - DPT Investigation No. 3 (02P100 to 02P105 [7/97]; 02P110 to 02P130 [9/97])
  - 02P106 to 02P109 (drive point wells in ditch) (7/97)
  - OLD02100 to OLD02103 (temporary wells) (7/97)
  - Install 3 piezometer clusters (9/97)

HERNDON ANNEX
SITE SCREENING INVESTIGATIONS

- Phase IV (1997) (cont.)
  - Sample existing wells for Natural Attenuation parameters (8/97)
  - Install 3 deep wells at Annex (OLD0212 to OLD0214) to confirm DPT results (8/97)
  - Install 2 clusters (OLD0215 to -19) to confirm DPT results in Azalea Park (12/97)

HERNDON ANNEX
SITE SCREENING INVESTIGATIONS

- Phase V (1998)
  - Install (2) additional monitoring wells at "source" of benzene plume
  - Sample all wells for VOCs and NA parameters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02W003
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02Q118
02S021
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02S020
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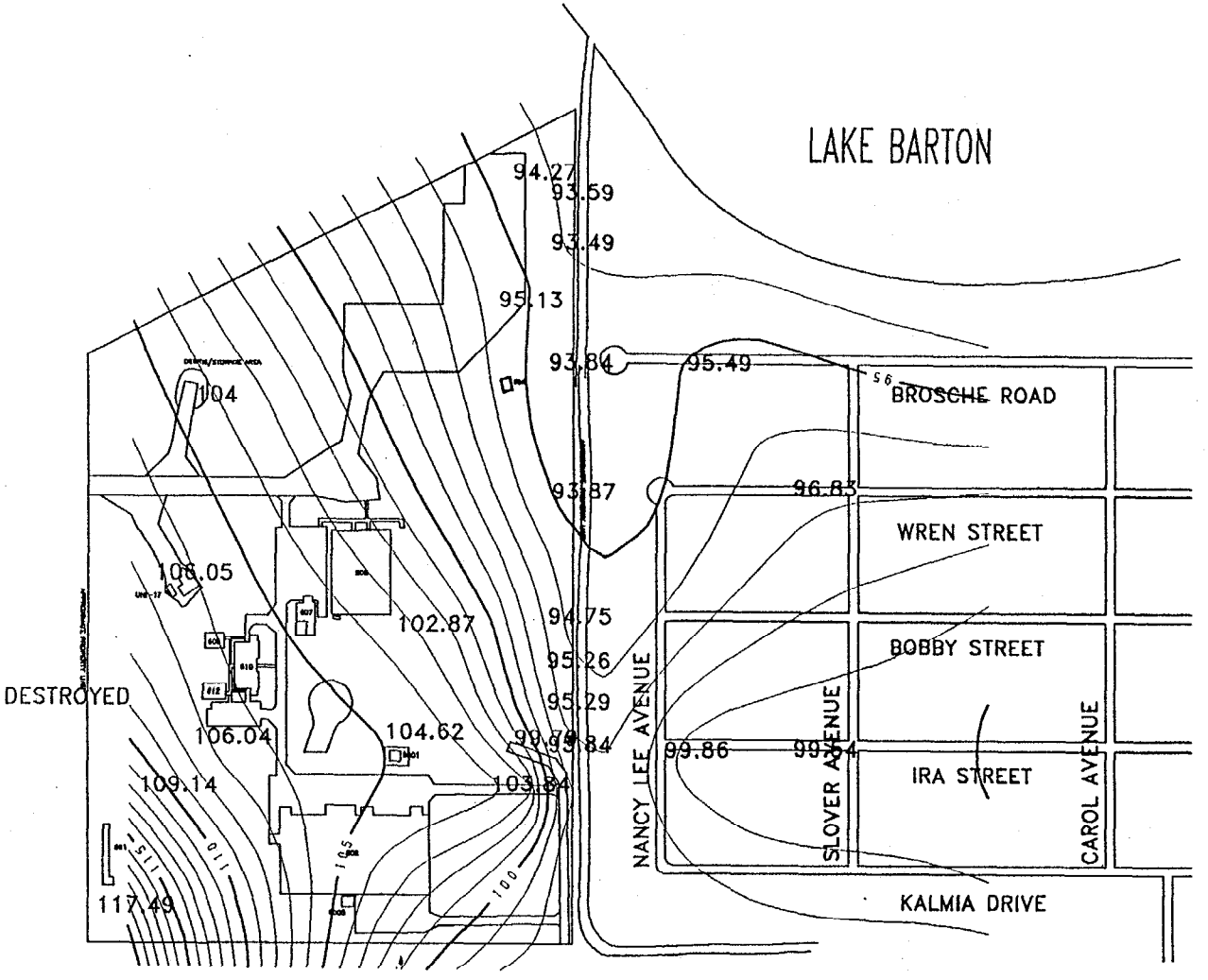
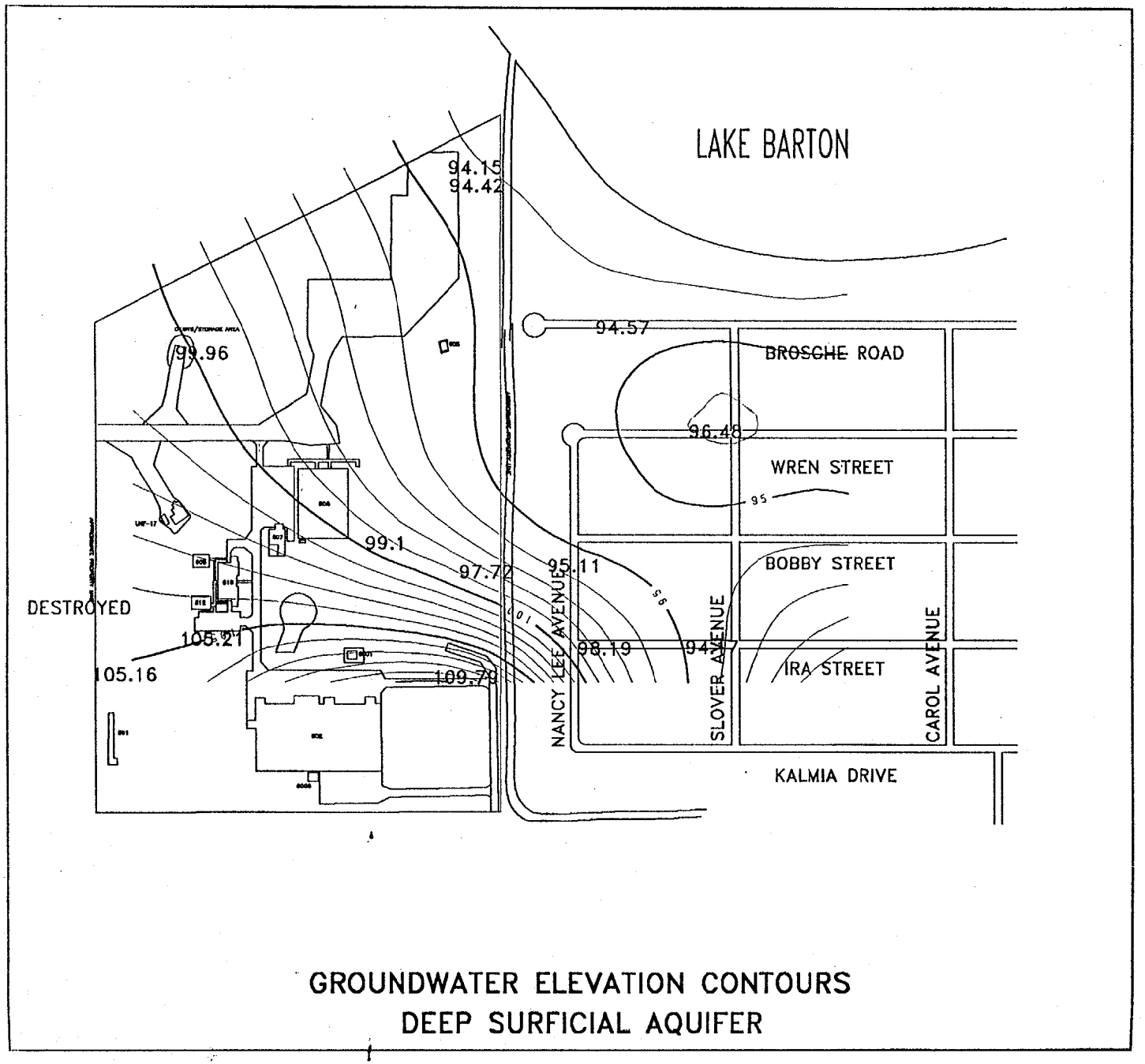
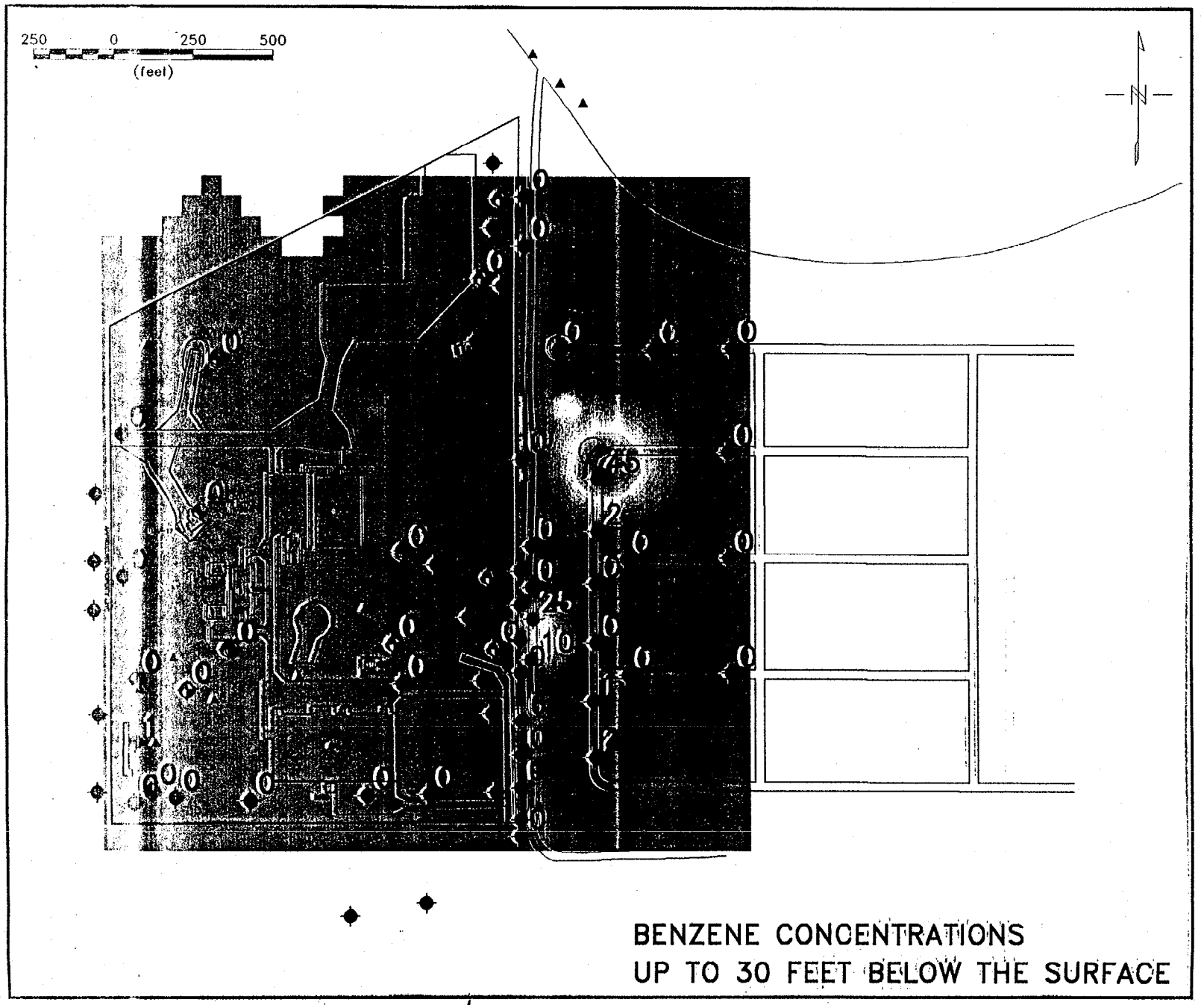


GROUNDWATER ELEVATION CONTOURS
SHALLOW SURFICIAL AQUIFER



GROUNDWATER ELEVATION CONTOURS
DEEP SURFICIAL AQUIFER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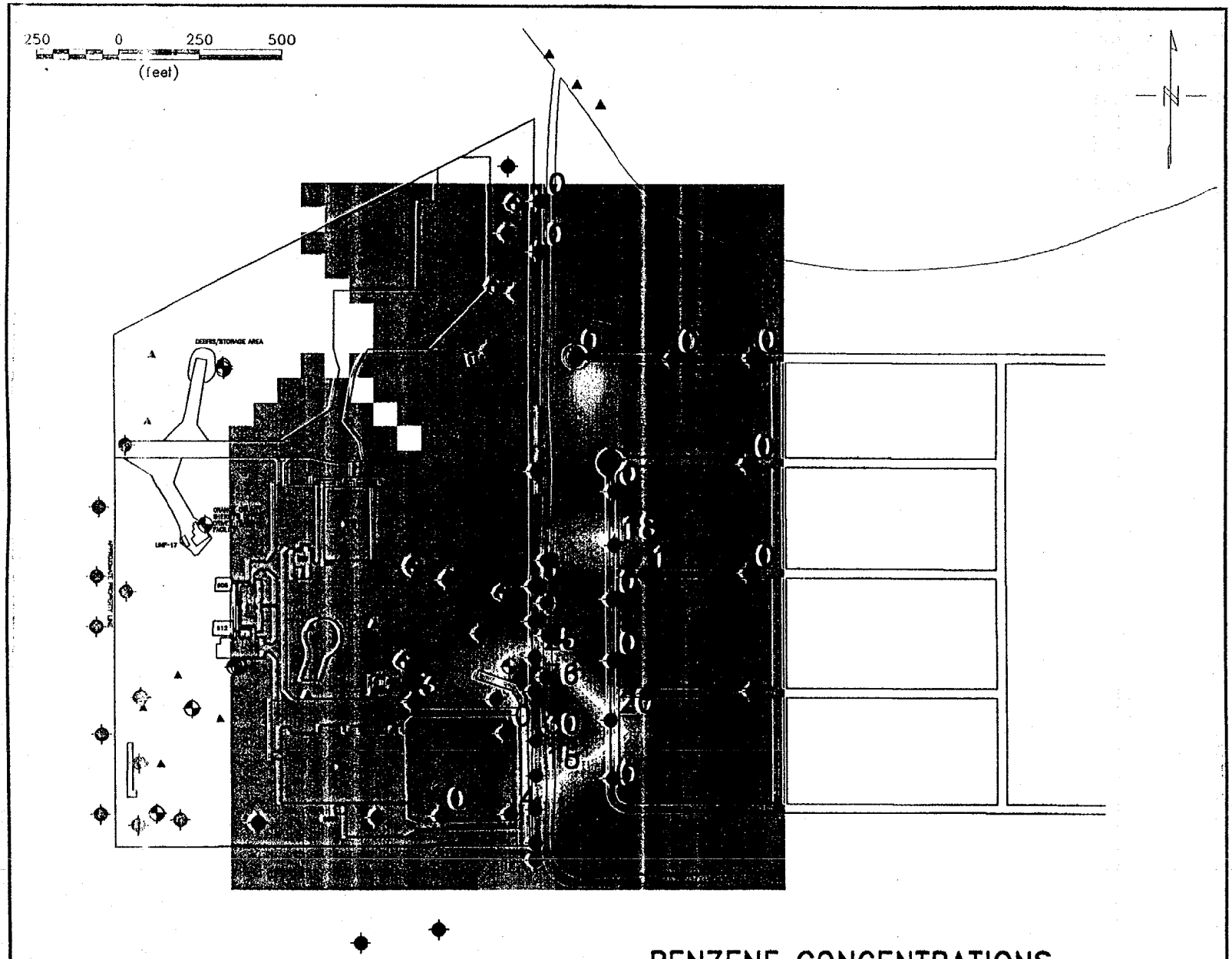
BENZENE CONCENTRATIONS
UP TO 30 FEET BELOW THE SURFACE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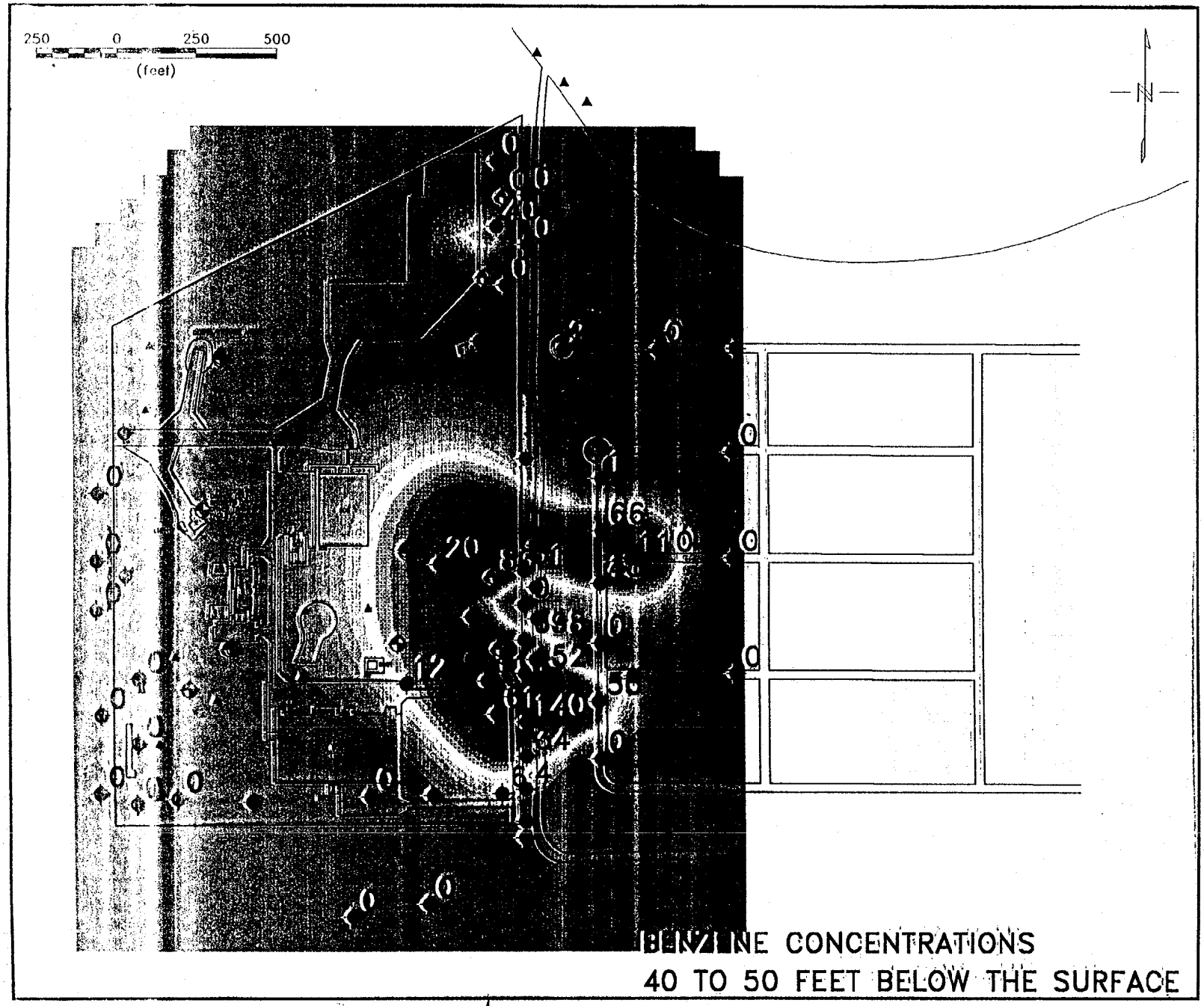
DEBRIS/STORAGE AREA
BENZENE CONCENTRATIONS
30 TO 40 FEET BELOW THE SURFACE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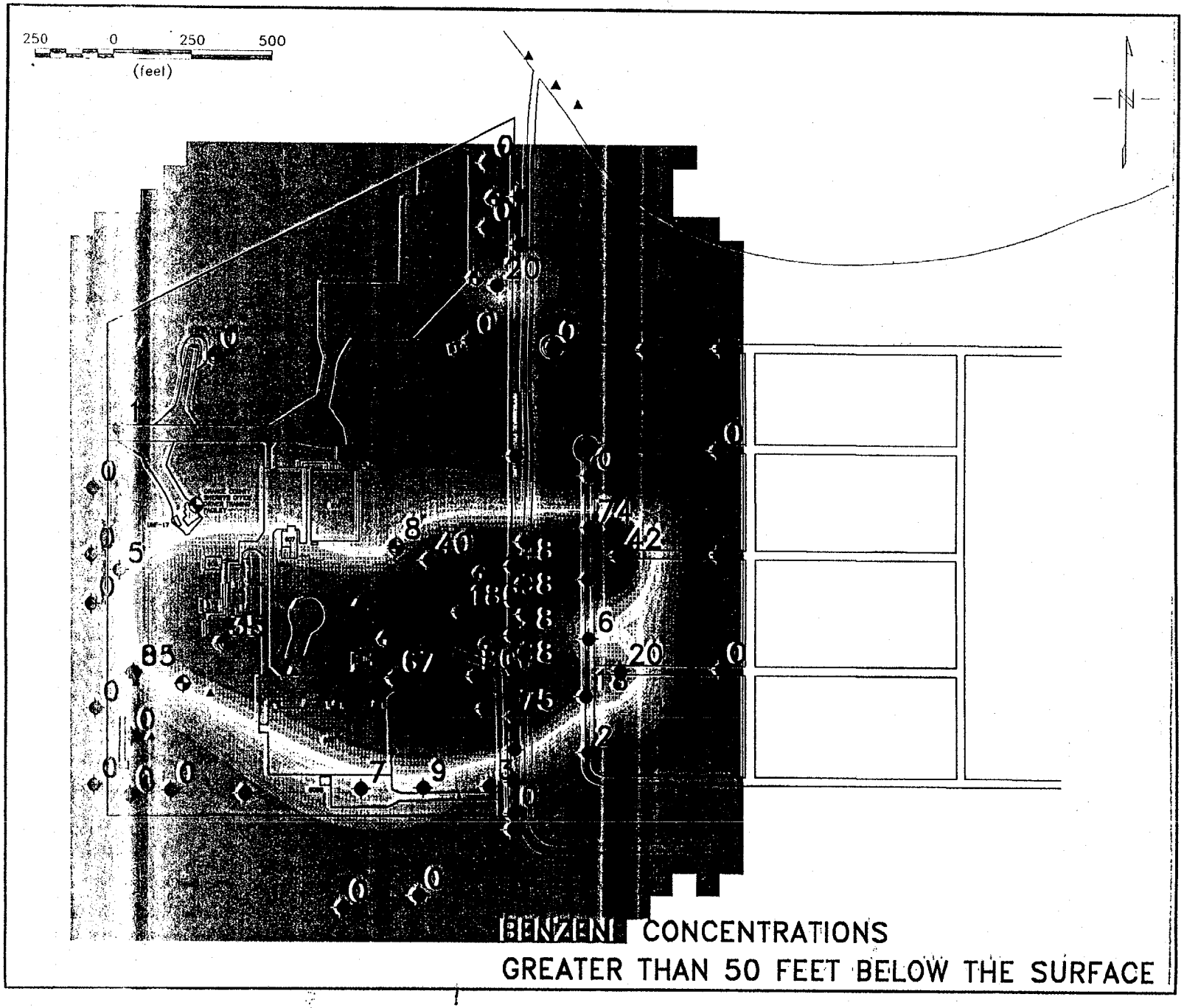
40 TO 50 FEET BELOW THE SURFACE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BENZENE CONCENTRATIONS
GREATER THAN 50 FEET BELOW THE SURFACE

Conclusions

- 50-acre benzene plume extends under residential neighborhood to the east
- The lack of shallow VOCs indicates an onsite release unlikely
- Source of benzene is likely coming from an upgradient source
- Higher concentrations of deep benzene along the eastern boundary suggests the leading edge of a plume
- A possible source is a former fire training area 1500 ft SW of Annex

Recommendations

- Groundwater (GW) use advisory to local residents
- Temporary GW use restriction; no permits issued for shallow wells
- Quarterly GW monitoring for one year to establish trends in contaminant increase/decrease
- Risk analysis
- Evaluation of remedial options and cost benefit analysis

HERNDON ANNEX STUDY AREA 2

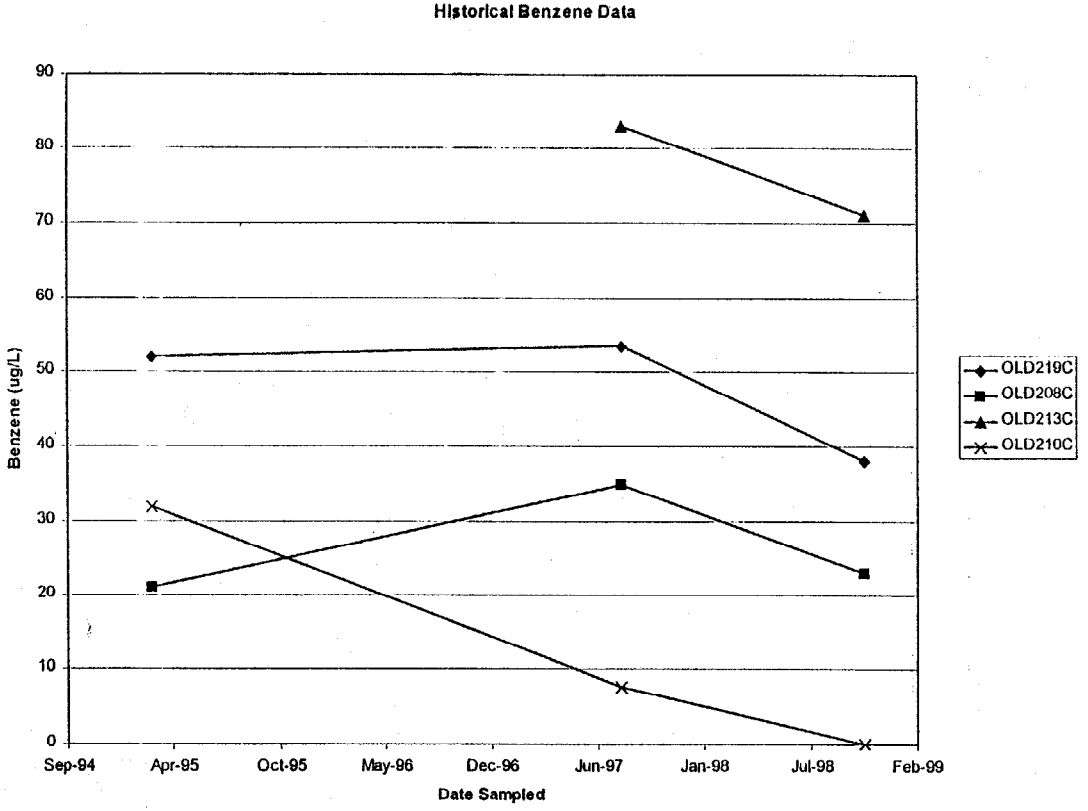
Results of Draft Focused Feasibility

July 1999

Observations: Study Area 2

- Benzene primary constituent of concern
- No definitive source
- Plume appears stable, decreasing at some locations
- Subsurface conditions anaerobic (likely methanogenic) thus biodegradation rates for benzene are slow

Historical Benzene Data



Development of Remedial Alternatives

- Alternative No. 1- No Action
- Alternative No. 2 - NA
- Alternative No. 3 - Enhanced Bio w/ ORC slurry injection (via DPT)
- Alternative No. 4 - Enhanced Bio w/ solid ORC and Ex-situ Air Stripping

Summary of Comparative Analysis

Alternative:	No. 1 No Action	No. 2 Natural Attenuation	No. 3 Enhanced Bioremediation	No. 4 Enhanced Bioremediation with Ex-situ Air Stripping
Groundwater Remediation				
Groundwater extracted?	No	No	No	Yes
Organics reduced?	Unknown	Yes	Yes	Yes
Estimated time to achieve drinking water standards (years):	Indefinite	30	[1]5	[1]5
Plume contained?	No	No	No	Yes
Remedy permanent?	Unknown	Yes	Yes	Yes
MCL attained?	Unknown	Yes	Yes	Yes
Reliability to achieve MCL?	Low	Medium	Medium	High
Residuals produced?	No	No	No	[2]No
Operation and Maintenance				
Treatment O&M Duration (yrs)	+30	30	[1]4	[1]4
Utilities Maintenance	No	No	No	Yes
Groundwater Monitoring	No	Yes	Yes	Yes
Total Cost				
Present Worth	$52,800	$460,200	$399,500	$1,612,200
Capital	$0	$16,500	$189,700	$780,300

[1] Plume > 10 µg/L treated to MCL within 4 years, while fringe area estimated to achieve MCL in 5 years.

[2] Air emissions meet FDEP air regulations without further treatment.

Notes: MCL = maximum contaminant level.
O&M = operation and maintenance.

Comparative Analysis of Alternatives

- **Alternative No. 1 - No Action**

  Retained due to NCP. Passive and low cost alternative using unmonitored NA to remediate benzene plume. Long duration and limited assurance to achieve MCL

Comparative Analysis (cont.)

- **Alternative No. 2 - NA**

  Monitored NA provides greater assurance of achieving benzene MCL at a low cost.

- **Alternative No. 3 - Enhanced Bio**

  Expedites NA to achieve MCL in shortest time and at relatively low cost.

Comparative Analysis (cont.)

- **Alternative No. 4 - Enhanced Bio w/ Ex-situ Air Stripping**

  Greatest assurance to achieve benzene MCL over short period of time and provides hydraulic containment of plume. Has highest estimated cost.

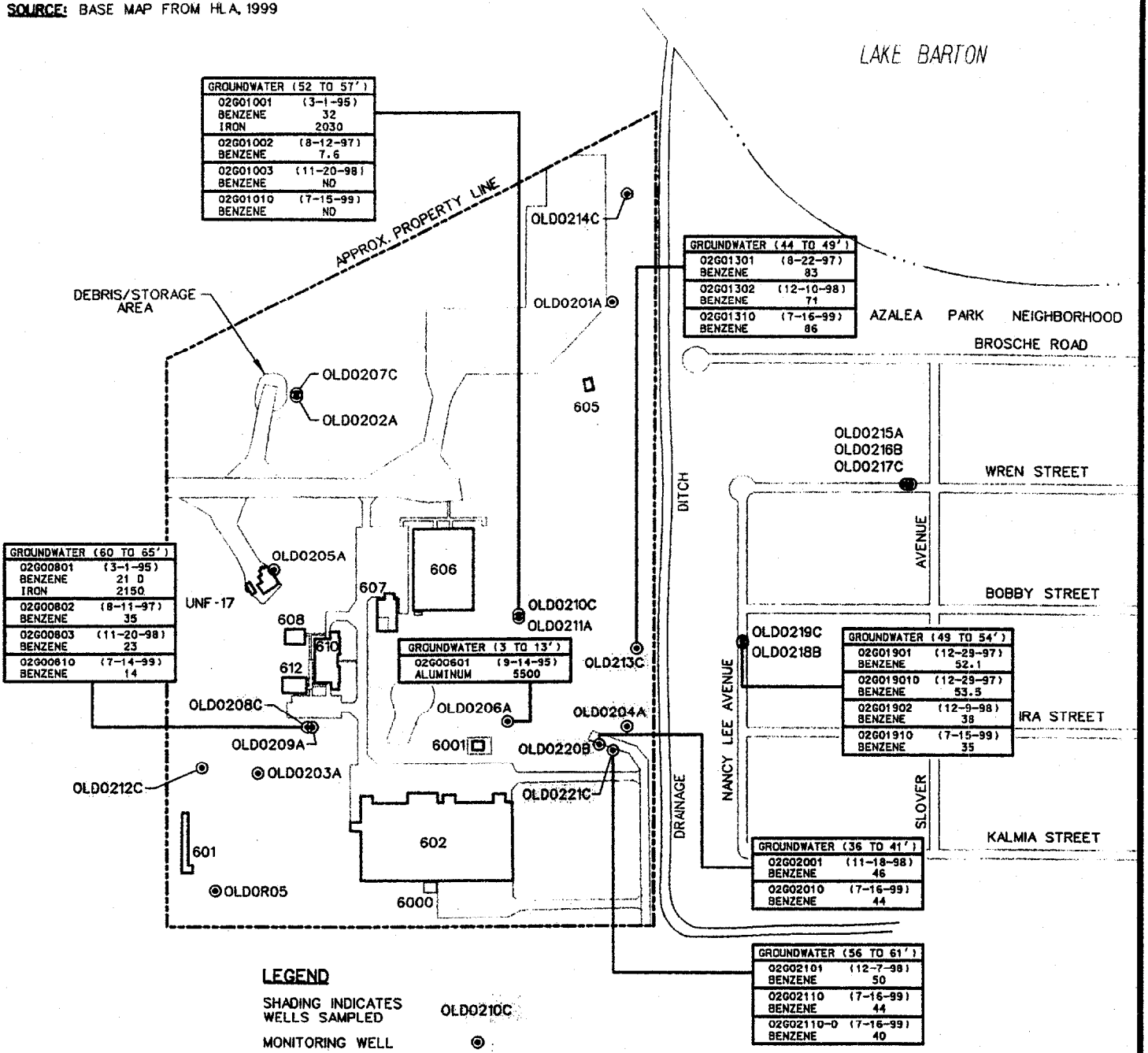


FIGURE 3

GROUNDWATER CONCENTRATIONS JULY, 1999 QUARTERLY MONITORING REPORT STUDY AREA 2 - HERNDON ANNEX

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

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CAD FILE NO./DATE: 74570012.dgn/9-28-99

ATTACHMENT F

Environmental Meeting - Public Invited

Restoration Advisory Board
Naval Training Center, Orlando

The Naval Training Center's Restoration Advisory Board (RAB) will hold its regular meeting concerning ongoing environmental studies and cleanup at NTC.

When: **7:00 - 9:00 P.M.**
Wednesday, September 15, 1999

Where: **Winter Park City Hall**
City Commission Chamber - second floor
401 Park Avenue South, Winter Park

The current status of all NTC environmental program sites will be presented. The special topic will be "Study Area 2 – Focused Feasibility Study and Remediation Decision". An open floor period for community comments or questions will follow the RAB business portion of the meeting.

Documents on the environmental program at NTC, Orlando, including summaries of prior RAB meetings, are available for public review at the Orange County Library, 101 East Central Avenue, Orlando. They are located in the Information Repository in the Social Sciences Department (Aisle 27) on the second floor.

Need More Information?

Call Mr. Wayne Hansel at 895-6714

or

Penny Felger at 657-8276

ATTACHMENT G

NAVAL TRAINING CENTER, ORLANDO
RESTORATION ADVISORY BOARD MEETING
WINTER PARK CITY HALL COMMISSION CHAMBER NOVEMBER 17, 1999

COMMUNITY SIGN-IN SHEET (please PRINT clearly)

NAME	ADDRESS (please include zip code)	TELEPHONE NO. (day/evening)	AFFILIATION (if any)	Would you like to be added to our mailing list?
NONE	—	—	—	—